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10/683,712	10/10/2003	Georg Bogner	12406-127001 / P2001,0258	2057
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EXAMINER NGUYEN, JOSEPH H				
ART UNIT 2815		PAPER NUMBER		
NOTIFICATION DATE 10/30/2009		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

### Office Action Summary

**Application No.**

10/683,712

**Applicant(s)**

BOGNER ET AL.

**Examiner**

JOSEPH NGUYEN

**Art Unit**

2815

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6-15, 17-25, 27, 28, 30, 31, 33-49, 52 and 54-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-15, 17-25, 27, 28, 30, 31, 33-49, 52 and 54-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Final Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 05/19/2009
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 17-19, 27 and 54-57 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang et al. (U.S. patent No. 6,246,111).

Regarding claims 17, 30 and 52, Huang et al. discloses in figure 5 a housing for one light emitting component 324 comprising a lead frame including a mount part having at least one wire connecting area; an opening formed therein and extending completely through the mount part; and at least one external electrical connecting strip 302; and a separately manufactured thermal connecting part 310 disposed in said opening and fastened into said mount part to form an electrical connection with the at least one external electrical connecting strip, said thermal connecting part having at least one chip mounting area; wherein the thermal connecting part extends through the opening in the mount part and connects to the mount part at the opening to transfer heat away from the mount part; and a housing base body 334 formed from a molding compound, wherein said lead frame embedded in said base body to pass out said

connecting strip from said base body, said thermal connecting part has a thermal connecting surface thermally connectable from the outside, and the housing is a surface mounted housing having bearing surface for the surface mounting with the thermal connecting surface extending to the bearing surface for conducting heat to an exterior surface to which the bearing surface mounts the housing. See col. 3, lines 54-67 and col. 4, lines 1-67.

Regarding claims 18-19, 27 and 54-57, Huang et al. discloses in figure 5 the chip mounting area and the thermal connecting surface are on opposite sides of the thermal connecting part.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 6-7, 9-12, 20-22, 28, 30-31, 33-35, 38-40, 43-46, 49, 52, 58 and 60-63 and 54-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. In view of Okazaki (JP5-102531).

Regarding claims 1, and 20-22, Huang et al. discloses in figure 5 a lead frame for a radiation emitting component 324 comprising a mount part having at least one wire connecting area (area where wire bond 332 connects lead frame 302); an opening

formed therein and existing completely through the mount part; and at least one external electrode connecting strip 302; and a separately manufactured thermal connecting part 310 disposed in said opening and fastened into said mount part to form an electrical connection with the at least one external electrical connecting strip 302, said thermal connecting part having at least one chip mounting area, wherein the thermal connecting part extends through the opening in the mount part and connects to the mount part at the opening to transfer heat away from the mount part. See col. 3, lines 54-67 and col. 4, lines 1-67.

Huang et al. does not disclose a reflector well surrounding the chip mounting area. However, Okazaki discloses in figure 2 a reflector well 11 surrounding the chip mounting area so as to increase reflection efficiency at the time of light emission (ABSTRACT). In view of such teaching, it would have been obvious at the time of the present invention to modify Huang et al. by including a reflector well surrounding the chip mounting area so as to increase reflection efficiency at the time of light emission.

Regarding claims 2-4, 6-7, 9-12, 28, 30-31, 33-35, 38-40, 43-46, 49, 52, 58 and 60-63 and 54-63, Huang et al. and Okazaki disclose all the structures set forth in the claimed invention.

2. Claims 8, 23-25, 36-37 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. and Okazaki et al.

Regarding claim 8, Okazaki et al. discloses in figure 2 the reflector well 11 has a height greater than the chip 30 but not necessarily the reflector well having height no

greater than twice a height of the chip. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Huang et al. and Okazaki et al. by including the reflector well having height no greater than twice a height of the chip, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 23, Okazaki et al. discloses in figure 2 the reflector well has a height greater than the chip 1 but not necessarily an overall height of said reflector being no greater than four times a height of the chip. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Huang et al. and Okazaki et al. by including an overall height of said reflector being no greater than four times a height of the chip, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 24, Okazaki et al. discloses in figure 2 the reflector walls and the reflector surfaces are at certain angles with respect to the main emission direction, but not necessarily at different angles with respect to the main emission direction. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Huang et al. and Okazaki et al. by including the reflector walls and the reflector surfaces are at different angles with respect to the main emission direction, since it has been held that discovering an optimum value of a result

effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 25, Okazaki et al. discloses in figure 2 substantially all the structure set forth in claim 25 except for an angle between the reflector walls and the main emission direction being greater than an angle between said reflector surfaces and the main emission direction. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Huang et al. and Okazaki et al. by including an angle between the reflector walls and the main emission direction being greater than an angle between said reflector surfaces and the main emission direction, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 36, Huang et al. discloses in figure 5 the semiconductor chip 324 and the radiation permeable compound 334 comprises a certain volume. Huang et al. nevertheless does not exclusively disclose the radiation permeable compound having a volume with the formula  $V \leq qH$  where H is a height of the chip and q is a scaling factor having a value less than  $10 \text{ mm}^2$ . It is noted that Huang et al.' chip 1 comprises a height as shown in figure 1B. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Huang et al. and Okazaki et al. by including the radiation permeable compound having a volume with the formula  $V \leq qH$  where H being a height of the chip and q being a scaling factor having a value less than  $10 \text{ mm}^2$ , since it has been held that discovering an optimum

value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 37, similar to claim 36 above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Huang et al. and Okazaki by including q being a scaling factor having a value equal to  $7 \text{ mm}^2$ , since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

3. Claims 13-15 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. and Okazaki et al. in view of Onda Mamoru (JP-58218153)

Regarding claims 13-15 and 59, Huang et al. discloses substantially all the structures set forth in claims 13-14 except for the at least one external electrical connecting strip having a surface coating of Ag. However, Onda Mamoru discloses in figure 1 the lead frame has its surface coated with Ag such that the lead frame displays excellent properties in the adhesive strength (English CONSTITUTION). In view of such teaching, it would have been obvious at the time of the present invention to modify Huang et al. and Okazaki et al. by including the at least one external electrical connecting strip having a surface coating of Ag so as to obtain the external connecting strip with excellent adhesive strength.

4. Claims 41, 42, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. and Okazaki et al. in view of Kumamoto et al. (U.S. patent No. 6,129,993).

Regarding claims 41 and 48, Huang et al. discloses in figure 1 substantially all the structures set forth in claims 41 and 48 except for the chip being mounted on the chip mounting area by a silver solder. However, Kumamoto et al. discloses in figure 8 the chip 8 is mounted to the chip mounting area 11 by a silver solder 13 (col. 7, lines 1-4). In view of such teaching, it would have been obvious at the time of the present invention to modify Huang et al. and Okazaki et al. by including the chip being mounted to the mounting area by a silver solder so as to firmly connect the chip to the package and thus effectively dissipate heat away from the chip.

Regarding claims 42 and 47, it is well known in the art that silver comprises a melting temperature greater than 260C.

5. Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al.

Regarding claim 64, Huang et al. discloses in figure 5 the semiconductor chip 324 and the radiation permeable compound 334 comprises a certain volume. Huang et al. nevertheless does not exclusively disclose the radiation permeable compound having a volume with the formula  $V \leq qH$  where H is a height of the chip and q is a scaling factor having a value less than  $10 \text{ mm}^2$ . It is noted that Huang et al.' chip 1 comprises a height as shown in figure 1B. However, it would have been obvious to one

having ordinary skill in the art at the time of the invention was made to modify Huang et al. and Okazaki et al. by including the radiation permeable compound having a volume with the formula  $V \leq qH$  where H being a height of the chip and q being a scaling factor having a value less than  $10 \text{ mm}^2$ , since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-4, 6-15, 17-25, 27-28, 30-31, 33-49, 52 and 54-64 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 8:30 am- 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kenneth A Parker/

Supervisory Patent Examiner, Art Unit 2815

/J. N./

Examiner, Art Unit 2815